

2. Kerr F, Kenoyer G, Bilitch M: Quinidine overdose—Neurological and cardiovascular toxicity in a normal person. *Br Heart J* 33:629-631, Jul 1971
3. Luchi RJ, Helwig J, Conn HL: Quinidine toxicity and its treatment. *Am Heart J* 65:340, 1963
4. Conn HL, Luchi RJ: Some quantitative aspects of the binding of quinidine and related quinoline compounds by human serum albumin. *J Clin Invest* 40:509, 1961
5. Shub C, Gau GT, Sidell PM, et al: The management of acute quinidine intoxication. *Chest* 73:173, 1978
6. Bismuth C, Pebay-Peyroula F, Frejaville J: Traitement actuel des cardiopathies toxiques. *Concours Med* 91 (Suppl) 21:4453-4470, 1969
7. Brown T: Tricyclic antidepressant overdose: Experimental studies on the management of circulatory complications. *Clin Toxicol* 9:255-272, 1976
8. Biggs JT: Clinical pharmacology and toxicology of antidepressants. *Hosp Pract*, Feb 1973, pp 79-84
9. Burckhardt D, Raeder E, Muller V, et al: Cardiovascular effects of tricyclic and tetracyclic antidepressants. *JAMA* 239: 213-216, 1978
10. Coté M, Elias G: Le propranolol dans les arythmies cardiaques par intoxication à l'imipramine (Tofranil) chez l'enfant. *Union Med Can* 103:1223-1225, 1974
11. Callahan M: Tricyclic antidepressant overdose. *JACEP* 8: 413-425, Oct 1979
12. Hagerman GA, Hanashiro PK: Reversal of tricyclic-antidepressant-induced cardiac conduction abnormalities by phenytoin. *Ann Emerg Med* 10:82-86, 1981

Ascorbic Acid and Nutrition

TO THE EDITOR: I am writing about the article by Richard Vilter, MD, "Nutritional Aspects of Ascorbic Acid: Uses and Abuses" in the December 1980 issue.¹ It is extremely well written and will certainly serve as a classic in the field, as our medical attention is drawn more and more to the apparent important aspects of nutrition and nutritional deficiency state. I would take issue with only a few points in the article.

First, one need only assess the incidence of false teeth in our country to ascertain whether Dr. Irwin Stone's hypothesis of very prevalent chronic subclinical scurvy has any merit.

Also, I reviewed references 73, 74, 75, 76, 78 and 80 from the article. In reading these review articles and original works, it becomes very evident that no type of blood testing to determine the at-risk population among those given vitamin C was used. Truly this is a breach of good scientific study. Until a reliable method of determining accurately serum vitamin C levels and pertinent factors is used, we will not be able to determine an at-risk group of persons, nor will we be able to assess accurately the efficacy of any dose of ascorbic acid, by whatever route applied, in the treatment of common colds.

To date we have tested 80 patients with a request for serum vitamin C levels. This has usually given us the reduced vitamin C, or ascorbic acid, content of the blood. I have found no specific trend according to this technique. My practice is composed mainly of chronic debilitated orthopedic-pain patients.

Recently, we tested 30 patients according to the technique indicated by Irwin Stone.² According to the "morbidity index" that he has defined, most of our patients have demonstrated values in the range of the "survived" or "convalescent" serum levels. The results that we have obtained seem to corroborate, on a preliminary basis, the fact that our patients are indeed clinically debilitated. There are other nutritional factors that we are presently assessing. It is my impression that Dr. Stone's morbidity index at least gives us a standard from which to compare possibly normal and abnormal patients. I am sure that this represents merely a step in the right direction, however. I believe that other measurements will be defined in the future so that we may be able to determine more accurately the specific group at risk from the low vitamin C levels in the blood.

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REFERENCES

1. Vilter RW: Nutritional aspects of ascorbic acid: Uses and abuses (Nutrition in Medicine). *West J Med* 133:485-492, Dec 1980
2. Stone I: The Healing Factor—Vitamin C Against Disease. New York, Grosset and Dunlap, Publisher, 1972

Hypokalemia in the Syndrome of Inappropriate Secretion of Antidiuretic Hormone

TO THE EDITOR: The cause of hypourcemia¹ and hypouricemia² in the syndrome of inappropriate secretion of antidiuretic hormone (SIADH) has been thought to be increased urinary losses of the above metabolites. I wish to report the association between hypokalemia and severe hyponatremia where the hypokalemia probably reflected increased urinary losses.

Eight cases were studied in which hyponatremia of less than 110 mEq per liter developed during patients' hospital stays and in which the criteria for the diagnosis of SIADH³ also were fulfilled. Four patients had malignant lesions (lung two, brain one, breast one), two had tuberculosis, one patient presented with pneumonia and the last patient had a cerebrovascular accident. All patients received at least five liters of 5 percent glucose in water intravenously during the first seven-day period in hospital. Serum sodium and potassium levels were measured at least four times from the time of admission to the time the serum sodium value fell below 110 mEq per liter. The results showing the change in electrolyte concen-

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trations are shown in Figure 1. Table 1 shows the percentage decrease in serum sodium and potassium. The decrease in serum sodium and potassium seen during the first five days can be explained by dilution. The pronounced drop in serum potassium values seen after serum sodium levels fell to below 110 mEq per liter is greater than what can be accounted for by dilution alone. This can be explained by the fact that severe hypotonic volume expansion can lead to a rise in aldosterone levels.⁴ This could then augment renal potassium losses. Urine potassium values seen in four of the above patients on days six and seven were 26, 31, 33 and 36 mEq per liter, respectively.

The importance of the above finding is that the

TABLE 1.—Percentage Decrease in Mean Sodium and Potassium Concentrations in the Eight Patients

	Percent Decrease in Concentration		
	Days 2-3*	Days 4-5*	Days 6-7*
Sodium	7.3	8.7	8.6
Potassium	9.3	8.1	29.0

*Reflects percentage decrease from previous electrolyte result.

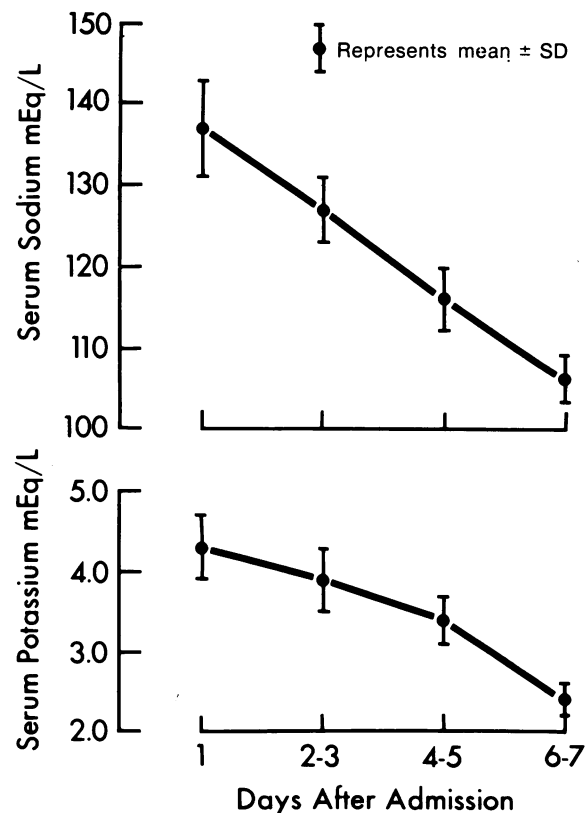


Figure 1.—Changes in serum sodium and potassium levels during the study period.

dangers of severe hypokalemia may be superimposed on the clinical problems encountered with severe hyponatremia in patients with SIADH.

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REFERENCES

1. Decaux G, Genette F, Mockel J: Hypouricemia in the syndrome of inappropriate secretion of antidiuretic hormone. *Ann Intern Med* 93:716-717, 1980
2. Beck LH: Hypouricemia in the syndrome of inappropriate secretion of antidiuretic hormone. *N Engl J Med* 301:528-530, 1979
3. Barrter FC, Schwartz WB: The syndrome of inappropriate secretion of antidiuretic hormone. *Am J Med* 42:790-806, 1967
4. Cohen JJ, Huller HN, Smithline N, et al: The critical role of the adrenal gland in the renal regulation of acid-base equilibrium during chronic hypotonic expansion. *J Clin Invest* 58:1201-1208, 1976

Medical Records as Instruments of Patient Care

TO THE EDITOR: In the February issue¹ Samuel E. Spital, Esq., reinforces the need for detailed record keeping as one of "the realities of practicing medicine in the 1980's."

It would be ostrich-like to argue the facts of life in our current legal climate. However, occasionally one must recall the purpose of record keeping. A written record is kept so that a physician may recall the pertinent medical facts about a patient. The record, therefore, represents a memory jog for the physician who obviously cannot keep all facts about all patients in his head, and a means of communicating the patient's medical history to another physician, should the occasion arise.

The facts of life of the second half of the 20th century, however, require that we keep records not to benefit the patient, nor to inform our colleagues, but to protect us from attorneys and negotiate for third party reimbursement. Therefore, entries into the medical record frequently contain items of no medical significance. Records have become an exercise in creative writing or a legal document. As such, it is almost impossible to make a record which is not penetrable by a clever plaintiff's attorney or deniable for payment by an underfunded agency. As physicians, we are not trained in law and thus are amateurs trying to create legally defensible documents.

The informed consent that all surgical patients sign in hospitals is a case in point. Such instruments represent words in a game played between the hospital's attorneys and the plaintiff's lawyers. They are rarely understandable to an average